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REMARKS

Claims 1-12 and 17-26 are pending in this application.

The Office action rejects claims 1-4, 6, and 11-12 under 35 U.S.C. 102(b) over Weinshall et al. (*From Ordinal to Euclidean Reconstruction with Partial Scene Calibration*, hereinafter Weinshall). The applicants respectfully traverse this rejection.

The Examiner's attention is again requested to MPEP 2131, wherein it is stated:

"A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The *identical invention* must be shown in as *complete detail* as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Each of independent claims 1 and 11, upon which claims 2-6 and 12 depend, specifically claims a method of determining a position of an unknown point in space using at least two cameras aimed to have a substantially overlapping field of view, that includes generating in each of the cameras an image corresponding to at least four points lying in a reference plane, the reference plane being common to the respective images of the cameras.

Weinshall is silent with regard to generating an image in each camera corresponding to four points lying in a reference plane that is common to the images of the cameras.

The Office action cites Weinshall's section 2.1 for teaching a reference plane that is common to the images of the camera. The applicants respectfully disagree with this characterization of Weinshall. Weinshall's section 2.1 is entitled "Reference Plane Coordinate System", and presents an overview of how the shape of an object can be represented in a reference plane coordinate system. Weinshall's section 2.1 does not reference cameras, does not reference camera images, and does not reference obtaining such images from a pair of cameras so that they are common to this reference plane. Weinshall subsequently discusses projecting scene points to a reference plane through a camera's focal point in section 2.2, and then presents mapping the reference plane to the image plane of each camera in section 2.3.

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As an introduction to section 2.1, Weinshall describes the process of obtaining a projection of a point in space to an image plane, via a projection matrix M_i that depends upon the location and orientation of each camera. Weinshall specifically states: "we break down the projection into 2 operations: the projection of the 3D world onto a 2D reference plane Π through the focal-point P_i , followed by a 2D projective transformation (homography) which *maps the reference plane Π to the image plane of camera i* " (Weinshall, page 210, third full paragraph).

The applicants respectfully maintain that, if Weinshall teaches that the image plane of the cameras is common to the reference plane, as asserted in the Office action, there would be no need in Weinshall to "map the reference plane to the image plane", as specifically taught by Weinshall.

Because Weinshall does not teach generating in each of the cameras an image corresponding to at least four points lying in a reference plane, the reference plane being common to the respective images of the cameras, as specifically claimed in claims 1 and 11, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 1-4, 6, and 11-12 under 35 U.S.C. 102(b) over Weinshall.

The Office action rejects claims 5, 7-8, 10, and 17-26 under 35 U.S.C. 103(a) over Weinshall and Wilson et al. (USP 5,386,299, hereinafter Wilson). The applicants respectfully traverse this rejection.

Claim 5 is dependent upon claim 1, discussed above with regard to Weinshall. Because Weinshall does not teach the elements of claim 1 that are relied upon in the rejection of claim 5, the applicants respectfully request the Examiner's reconsideration of the rejection of claim 5 under 35 U.S.C. 103(a) over Weinshall and Wilson.

Claim 7, upon which claims 8-10 depend, claims a reconstruction system that includes a jig that supports two cameras, two calibration markers, and at least four reference markers in a visual field of each of the at least two cameras, all of the reference markers lying in a common plane.

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The Office action asserts that Weinshall "discloses a 3D reconstruction system including at least two cameras using at least two calibration markers and at least four reference markers", but provides no references to Weinshall for this teaching. The Office action further acknowledges that Wilson does not teach using two calibration markers as well as four reference markers, and asserts that including these six markers "would have been obvious in light of his disclosure", but also provides no references in Wilson to support this assertion.

Weinshall specifically teaches a reconstruction system that does not require the use of reference points. The only requirement in Weinshall is "knowledge that two pairs of lines on the plane are parallel" (Weinshall, Abstract, lines 7-8). Weinshall also teaches that the height of two reference points can be used to determine heights of objects in the images, but specifically notes that these two reference points *must not lie in the same plane* (Weinshall, Abstract, lines 10-11, and equation (7)).

Wilson specifically teaches a movable member 52 that includes a reference surface 52-1 and a reference surface 52-3. The moveable member 52 is rotated through an angle of 38 degrees to present each of these reference surfaces 52-1 and 52-3 to the camera 20. As is clear in Wilson's FIG. 3, the surfaces 52-1 and 52-3 are located at different distances relative to the camera 20, and thus cannot be said to lie on a common plane. Further, claim 7 specifically recites that the markers are all within the field of view of each camera, whereas Wilson specifically shows opposing cameras with no overlapping fields of view.

Because neither Weinshall nor Wilson, individually or collectively, teach or suggest a reconstruction system that includes a jig that supports two cameras, two calibration markers, and at least four reference markers in a visual field of each of the at least two cameras, all of the reference markers lying in a common plane, as specifically claimed by the applicants, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 7-8 and 10 under 35 U.S.C. 103(a) over Weinshall and Wilson.

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Claim 17, upon which claims 18-23 depend, claims a system that includes a screen that includes at least two apertures, and a support that is arranged such that a field of view of each of at least two optical devices on the support includes a corresponding aperture and overlaps at least a field of view of at least another of the optical devices.

Claim 24, upon which claims 25-26 depend, claims a method of determining a location of an object, comprising providing a screen with at least two apertures, and providing at least two images, each image including a view of edges of a corresponding aperture and a view of the object within the edges of the corresponding aperture.

The Office action fails to demonstrate that either Weinshall or Wilson teach these claimed elements. The Office action cites the arguments used to reject claims 1, 7, and 8 to support the rejection, but these arguments do not address the claimed elements of claims 17 and 24.

The Examiner's attention is requested to MPEP 2142, wherein it is stated:

"To establish a *prima facie* case of obviousness ... the prior art reference (or references when combined) *must teach or suggest all the claim limitations*." Further: "The examiner bears the initial burden of factually *supporting* any *prima facie conclusion* of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."

Because the Office action fails to support the conclusion of obviousness, the applicants respectfully maintain that the rejection of claims 17-24 under 35 U.S.C. 103(a) over Weinshall and Wilson is unfounded.

The Office action rejects claim 9 under 35 U.S.C. 103(a) over Weinshall, Wilson, and Proesmans et al. (USP 6,510,244, hereinafter Proesmans). The applicants respectfully traverse this rejection.

Claim 9 is dependent upon claim 7, discussed above with regard to Weinshall and Wilson. Because neither Weinshall nor Wilson, individually or collectively, teach or suggest the elements of claim 7 that are relied upon in the rejection of claim 9, the applicants respectfully request the Examiner's reconsideration of the rejection of claim 9 under 35 U.S.C. 103(a) over Weinshall, Wilson, and Proesmans.

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In view of the foregoing, the applicants respectfully request that the Examiner withdraw the rejections of record, allow all the pending claims, and find the present application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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